

DEPARTMENT OF CONSUMER & INDUSTRY SERVICES

DIRECTOR'S OFFICE

GENERAL INDUSTRY SAFETY STANDARDS

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(By authority conferred on the director of the department of consumer and industry services by sections 16 and 21 of Act No. 154 of the Public Acts of 1974, as amended, and Executive Reorganization Order No. 1996-2, being §§408.1016, 408.1021, and 445.2001 of the Michigan Compiled Laws)

Bureau of Safety and Regulation, Standards Division Web-Site: www.cis.state.mi.us/bsr/divisions/std

PART 22. TRACTORS

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R 408.12201. Scope.

Rule 2201. This part provides for the safe care and use of tractors as defined in this part and used in nonagricultural operations.

R 408.12203. Definitions; A to F

Rule 2203. (1) "Attachment" means a removable or permanently mounted device on a tractor, such as, but not limited to, sweepers, mowers, blades, forks, front-end loaders, and post hole diggers.

(2) "Drift" means to move without control.

(3) "Fork-lift tractor" means a high-lift, self-loading tractor equipped with load carriage and forks for transporting and tiering loads.

(4) "Free play" means an uncontrolled movement.

R 408.12205. Definitions L.

Rule 2206. (1) "Load-axle" means a tractor axle nearest the load.

(2) "Load backrest extension" means a device extending vertically from the fork carriage frame.

(3) "Load-engaging" means a load-handling device attached to a tractor for the purpose of handling a load.

(4) "Low-profile tractor" means a wheeled tractor possessing all of the following characteristics:

- (a) The front wheel spacing is generally equal to the rear wheel spacing, as measured from the centerline of each right wheel to the centerline of the corresponding left wheel.
- (b) The clearance from the bottom of the tractor chassis to the ground is not more than 18 inches.
- (c) The highest point on the hood is not more than 60 inches.
- (d) The tractor is designed so that the operator, when seated, straddles the transmission.

R 408.12206. Definitions; M to P.

Rule 2206. (1) "Mast" means a support member providing the guideways permitting vertical movement of the carriage. It is usually constructed in the form of channels or similar sections and provides the supporting pathway for the carriage rollers.

(2) "Nonagricultural operations" means work activity other than that designated in major groups 01 and 02, that is, agricultural production of crops and livestock of the Standard

Industrial Classification Manual, United States bureau of the budget, 1972 edition, and includes any practices other than those performed by a farmer, or on a farm as an incident to, or in conjunction with, such farming operations. Examples of nonagricultural operations are landscaping, groundskeeping, roadway maintenance, construction services, loading, and digging.

(3) "Operator" means an employee who has been trained and authorized by the employer or his designated representative to operate a tractor.

(4) "Overhead guard" Means a framework fitted to a tractor over the head of a riding operator to protect the operator from falling objects.

(5) "Parking brake" means a device to prevent the movement of a parked tractor.

R 408.12207. Definitions; R to T.

Rule 2207.(1) "ROPS" means a rollover protective structure. ROPS may be a protective frame or a protective enclosure mounted to a tractor.

(2) "Self-loading" means the capability of a tractor to pick up, carry, set down, and, in case of high-lift types, to stack or tier its load without the aid of external means.

(3) "Service brake" means a device designed to bring a moving tractor to a halt.

(4) "Tractor" means 1 of the following:

(a) "Agricultural-type tractor" means a 2-or 4-wheel drive vehicle of more than 20 engine horsepower and designed to furnish the power to pull, carry, propel, or drive attachments primarily intended for use in agricultural operations.

(b) "Industrial tractor" means a 2-or 4-wheel drive vehicle of more than 20 engine horsepower designated as an industrial tractor by the manufacturer, but having the appearance of an agricultural tractor, and designed to furnish the power to pull, carry, propel, or drive attachments primarily intended for industrial use.

(5) "Tiering" means a process of placing a load on or above another load.

(6) "Tractor weight" means the combined weight of the protective frame or enclosure, all fuels, and other components required for the normal use of the tractor.

R 408.12211. Labels.

Rule 2211. Painted or affixed information necessary for the safe operation of a tractor and an attachment, when in use, shall be in a legible condition.

R 408.12212. Modifications.

Rule 2212.(1) An additional counterweight, excluding wheelweights, or other counterweights supplied by the manufacturer and used as recommended, shall not be installed on a tractor by the employer without written assurance from the manufacturer of the tractor that the stability of the tractor is maintained.

(2) Other modifications affecting the tractor's capacity or safety shall not be made without written approval of the manufacturer, the special equipment manufacturer, or an engineer knowledgeable on the subject. Capacity, operation, and maintenance instruction plates, tags, or decals shall be changed accordingly.

R 408.12213. Parking brakes.

Rule 2213. A tractor shall be equipped with a parking brake or parking lock capable of holding the tractor on the maximum grade that the tractor can negotiate with rated load, or on a 15% grade, whichever is lesser. The parking brake or parking lock shall be manually or automatically applied and shall remain applied until released by the operator.

R 408.12214. Backhoe-equipped tractors.

Rule 2214. If a tractor is equipped with a backhoe, outriggers shall be provided and used, when necessary, to maintain stability.

R 408.12215. Load-handling controls; identification; single lever.

Rule 2215. (1) A load-handling control on a tractor shall be identified to indicate its function and the direction of the motion of the load or equipment.

(2) A single lever may be used to perform more than 1 function. Push-button or pre-selected controls shall be properly identified.

R 408.12216. Overhead guards.

Rule 2216. (1) When a load is lifted higher than the head of the operator, and the load creates a hazard to the operator, or when the operator is endangered by a hazard of falling objects other than the load, an overhead guard shall be provided. The overhead guard shall be as prescribed in SAE-J167A, Overhead Protection for Agricultural Tractors Standard, which is incorporated herein by reference. This standard may be inspected at the Lansing office of the department of consumer and industry services. The standard may be purchased at a cost of 50 cents from the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, Pennsylvania 15096, or from the Michigan Department of Consumer and Industry Services, 7150 Harris Drive, Box 30643, Lansing, Michigan 48909.

(2) The overhead guard shall be constructed in a manner that minimizes interference with the driver's horizontal visibility. The overhead guard may be constructed of a solid material. If a grid or mesh is used, a 1.5-inch diameter circle shall be the maximum circle that can be inserted between the elements of the grid or mesh. The guard shall be large enough to extend over the operator under all normal circumstances of tractor operation, including forward and rearward tilt of the mast.

(3) On a tractor, a vertical clearance of not less than 39 inches should be maintained from the point of maximum depression of the operator's seat to the underside of the section of the overhead guard under which the operator's head moves during normal operation.

(4) Where head room conditions limit the overall lowered height of the tractor, the normal clearance height may be reduced if the operator wears safety head protection as prescribed in Part 32. Head Protection, being R 408.13201 et seq. of the Michigan Administrative Code.

R 408.12217. Operation of tractor on slope, ROPS requirements; remounting; labeling.

Rule 2217.(1) After January 1, 1980, an employer shall not permit a tractor to be operated on a slope that could cause the tractor to overturn, unless the tractor is equipped with a ROPS. A low-profile that is used where the vertical clearance is insufficient to allow a ROPS-equipped, low-profile tractor to operate, and where it is used inside a building, is excepted from this requirement.

(2) A ROPS for a wheel-type tractor shall meet the test and performance requirements of the federal occupational safety and health administration, 29 C.F.R. 1928.52 and 1928.53 of the April 25, 1975 Federal Register; 29 C.F.R. 1926.1001 and 1926.1002 of the June 3, 1974 Federal Register, which are incorporated herein by reference, and are available for inspection at the Lansing office of the department of consumer and industry services. The Federal Register for the above dates is available from the Superintendent of Documents, Washington, D.C. 20402, at a cost of 75 cents each, or the Michigan Department of Consumer and Industry Services, 7150 Harris Drive, Box 30643, Lansing, Michigan 48909, at the cost of 20 cents each.

(3) If a ROPS is removed for any reason, it shall be remounted before the tractor is operated so as to meet the requirements of this rule.

(4) Each ROPS shall have permanently affixed to it a label that states:

- (a) Manufacturer's or fabricator's name and address.
- (b) ROPS model number, if any.
- (c) Tractor make, model, or series number that the ROPS is designed to fit.
- (d) That the ROPS model was tested in accordance with the requirements of 29 C.F.R. 1928.52, 29 C.F.R. 1928.53, or 29 C.F.R. 1926.1001 as incorporated herein by reference.

R 408.12218. Construction of seat belts.

Rule 2218. An employer shall equip each tractor having a ROPS with a seat belt which meets the requirements of the standard, SAE J4C 1965, motor vehicle seat belt assemblies, except as noted in rule 2252 (2) and (3). This standard is incorporated herein by reference and may be inspected at the Lansing office of the department of consumer and industry services. This standard may be purchased at the cost of \$3.20 from the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, Pennsylvania 15096, or the Michigan Department of Consumer and Industry Services, 7150 Harris Drive, Box 30643, Lansing, Michigan 48909.

R 408.12219. Protection from spillage, pinch points, and power take-offs.

Rule 2219. (1) Covers, caps, and breathers for batteries, fuel tanks, oil reservoirs, and coolant systems shall be kept in place.

(2) Any pinch point or shear point created by the tractor or the attachments, or both, that create a hazard, to which an operator in normal operating position is exposed, shall be guarded.

(3) A tractor having a power take-off shaft shall be equipped with a master shield on the power take-off shaft, except as permitted in subrule (4). The shield shall have a strength capable of preventing permanent deformation when a 250-pound operator mounts or dismounts the tractor using the shield as a step.

(4) Power take-off-driven equipment shall be guarded to prevent employee contact with the positively driven, rotating member of the power-driven system. Where power take-off-driven equipment is of a design requiring the removal of the master shield, the attaching equipment shall include protection from that portion of the tractor power take-off shaft that protrudes from the tractor.

R 408.12220. Restrictions of use.

Rule 2220. (1) Except as provided in subrule (2), a tractor shall not be used in an environment that is likely to contain an ignitable mixture of gases, vapors, dusts, or fibers.

(2) A tractor used in a hazardous environment, as noted in subrule (1), shall be equipped and labeled as prescribed in the national fire protection association standard, 505-1975, Type Designations, Areas of Use, Maintenance, and Operation of Powered Industrial Trucks, incorporated herein by reference. This standard is available for inspection at the Lansing office of the department of consumer and industry services. The standard may be purchased at a cost of \$2.75 from the National Fire Protection Association, 470 Atlantic Avenue, Boston, Massachusetts 02210, or from the Michigan Department of Consumer and Industry Services, 7150 Harris Drive, Box 30643, Lansing, Michigan 48909.

(3) A tractor with an internal combustion engine shall not be operated in a building or enclosed area unless ventilation is provided which reduces the concentration of toxic gases below the maximum allowable limits as set by the Michigan department of consumer and industry services.

R 408.12231. Operator Selection.

Rule 2231. (1) An employee assigned to operate a tractor shall meet the following minimum requirements:

- (a) Have corrected vision that meets the requirements for a valid Michigan driver's license. Evidence of meeting this requirement shall be a Michigan driver's license or a doctor's certificate.
- (b) Have effective use of all 4 limbs.
- (c) Be of a height sufficient to operate the controls and to have a unobstructed view over the controls and dashboard.
- (d) Have coordination between eyes, hands, and feet.
- (e) Have freedom from known convulsive disorders or episodes of unconsciousness.
- (f) Have the hearing ability to hear and understand conversational levels of sound in an ordinary office environment.
- (g) Have the ability to understand signs, labels, and instructions.

(2) An employee who operates a tractor at the effective date of this part and who does not meet the requirements of subdivisions (a), (b), (c), (d), (f), and (g), of subrule (1) may be continued as an operator if the handicap or inability does not prove detrimental to the task.

R 408.12232. Training.

Rule 2232. An employer or his designated representative shall provide training to an employee prior to the employee's assignment as an operator of a tractor. Instructions shall include the following:

- (a) Capabilities of the equipment and attachments.
- (b) Purpose, use, and limitations of controls.
- (c) How to make daily checks.
- (d) Practice operating assigned tractors through the functions necessary to perform the required jobs.
- (e) Use of seat belts.

R 408.12233. Testing.

Rule 2233. Before an employer or his designated representative authorizes an employee to operate a tractor, the employee shall demonstrate his ability to satisfactorily operate a tractor to the employer.

R 408.12234. Permits.

Rule 2234. An employer shall establish a procedure that assures that an employee is trained and qualified to operate a tractor prior to authorizing the employee to operate a tractor. A permit system may be used to comply with this rule.

R 408.12235. Mechanical condition and maintenance.

Rule 2235. (1) Repair or service work shall not be performed on tractors or attachments while the engine is running, except to make those adjustments that cannot otherwise be made.

(2) A ROPS structure shall not be welded, machined, or otherwise modified unless an engineer qualified in this field, a recognized testing laboratory, or the original manufacturer certifies that the welding, machining, or modification will not alter the original strength rating.

(3) An employer shall not permit a tractor to be used if any of the following conditions exist:

- (a) The service or parking brakes do not perform their intended function.
- (b) The fuel system leaks.
- (c) A lift cylinder of a load engaging means allows a downward drift of the load-engaging means, loaded or unloaded, in excess of 5 inches in 5 minutes.

- (d) A hydraulic system leaks and creates a hazard for an employee or equipment in the area.
- (e) The tractor runs in excess of normal operating temperature thereby creating a hazardous condition.
- (4) Repairs to a tractor shall not be made in a location made hazardous by the following conditions:
 - (a) Flammable gases or vapors.
 - (b) Combustible dusts.
 - (c) Ignitable fibers.
- (5) A replacement part that affects the safety of the operation of the tractor shall provide not less than the equivalent safety of the original part.
- (6) All repairs and modifications shall be made by authorized and qualified personnel.
- (7) Before servicing or repairing a hydraulic system of a tractor the pressure of the system shall be relieved.

R 408.12236. Blocks and safety stands.

Rule 2236. An employer shall provide and require the use of blocks or safety stands as a secondary support for tractors or attachments elevated from the floor by a floor jack, hoist, or chain fall.

R 408.12237. Fuel.

Rule 2237. (1) An employer shall provide and require the use of approved safety fuel cans where tractors are refueled with gasoline at other than a gas pump area or tank wagon.

(2) A tractor shall not be refueled while the engine is running or while a source of ignition is within 25 feet of the tractor. Spilled fuel shall be carefully washed away or completely evaporated, and the fuel tank cap replaced before restarting the engine.

R 408.12239. Lift platforms.

Rule 2239. (1) An employee shall not be lifted by a fork-lift tractor except when a platform is attached to the forks by enclosed sleeves and a safety chain, or other mechanical device in such a manner that the platform cannot tip or slip.

(2) A platform shall be equipped with a top railing approximately 42 inches high, an intermediate rail, and a toeboard. The railing shall consist of 1 of the following materials:

- (a) Wood posts of at least 2 x 4 inches nominal stock, the top rail shall be made of 2 right angle pieces of not less than 1 x 4 nominal stock and an intermediate rail of 1 x 4 inch nominal stock.
- (b) Steel or aluminum pipe posts and rails with an inside diameter of not less than 1 inch and an intermediate rail of $\frac{3}{4}$ -inch inside -diameter pipe.
- (c) Structural steel or aluminum posts, rails and intermediate rails of angle iron of not less than 1 x 1 x $\frac{3}{16}$ inch size, or other shapes of equal strength.
- (3) The toeboard shall be made of not less than 1 inch x 4 inch nominal wood stock or a material of equal strength.
- (4) The intermediate rail may be omitted from 1 side if necessary to perform the work.
- (5) Any pinch point or shear point on the lifting mechanism to which an employee on the lift platform is exposed shall be guarded.
- (6) An employee shall not be transported in a front-end loader bucket.

R 408.12240. Load backrest extensions.

Rule 2240. A load backrest extension shall be used on a fork-lift tractor whenever necessary to minimize the possibility of a load or part of it falling rearward.

R 408.12241. Spinner knobs.

Rule 2241. A spinner knob shall not be attached to a steering wheel on a tractor.

R 408.12242. Signs, lights, and warning devices.

Rule 2242. (1) A tractor that is operated on a public street or road shall display a slow moving vehicle sign, as prescribed in rule 3721 of Part 37. Accident Prevention Signs and Tags, being R 408.13721 of the Michigan Administrative Code. The tractor shall be equipped with an amber flashing or rotating light visible from 360 degrees.

(2) A tractor that is operated between dawn and dusk on a public street or road or in an area where general lighting is less than 2 foot-candles shall be equipped with headlights and a taillight.

(3) Where an employee's safety may be affected, a tractor used in areas where general lighting is less than 2 foot-candles shall be equipped with auxiliary lights that illuminate the work in progress.

R 408.12243. Tractor inspection; reporting defects.

Rule 2243. (1) A tractor shall be visually inspected prior to each shift to assure that there are no visible defects which would adversely affect the safe operation of the tractor and to assure that the prescribed safety devices are in place and functional.

(2) A tractor having any safety defects shall be reported to the supervisor for appropriate action.

R 408.12251. Operating rules, generally.

Rule 2251. (1) At the start of his shift, the operator of a tractor shall perform those checks of his equipment required by rule 2243.

(2) An operator shall not drive a tractor up to anyone who is standing in front of any fixed object.

(3) An operator shall not allow anyone to stand or pass under the elevated portion of any tractor or its attachments.

(4) An operator shall not put his arms or legs outside of the moving wheels of a tractor.

R 408.12252. Seat belt use.

Rule 2252. (1) An employee operating a tractor equipped with ROPS shall be required to wear a seat belt when the tractor is moving on a slope or under other conditions that affect its stability. The seat belt shall be adjusted so that it secures the operator to the seat.

(2) Where a suspended seat is used, the seat belt shall be fastened to the movable portion of the seat to accommodate the ride-motion of the operator.

(3) Any seat belt hardware or webbing with defects that adversely affect the purpose of the seat belt shall be repaired or replaced.

(4) No one except the operator shall ride on a tractor unless a seat is provided. Where ROPS is required, the seat shall be within the ROPS and a seat belt shall be worn to secure the rider to the seat.

R 408.12253. Parking.

Rule 2253. (1) When a tractor is temporarily parked within the vision of or within 25 feet of the operator, the operator shall neutralize the controls and set the parking brake or park lock.

(2) When a tractor is parked overnight or is left unattended, the power shall be shut off and the controls and attachments set so as to preclude any motion.

R 408.12254. Path of travel; clear access.

Rule 2254. (1) Before moving or stacking materials an operator shall observe his path of travel in order to avoid obstacles.

(2) When depositing a load, an operator shall maintain the clear access of fire aisles, to stairways, and to fire equipment.

R 408.12255. Reporting accidents.

Rule 2255. A tractor operator shall promptly report to his supervisor or other designated person all accidents involving injury to an employee or damage to buildings and equipment.

R 408.12259. Repairs; authorization; qualifications.

Rule 2259. An operator shall not make any repairs or adjustments unless specifically authorized and qualified to do so.

R 408.12260. Operation.

Rule 2260.(1) An operator shall do the following:

- (a) Operate a tractor according to the rules of this part and in accordance with local traffic rules when on a public road.
- (b) Look in the direction of and keep clear view of the direction of travel.
- (c) Travel with a load-engaging means elevated only sufficiently to clear obstacles on floor or roadway.
- (d) Start, stop, and turn in a manner that will prevent a load from shifting or overturning the tractor.
- (e) Drive at a slow speed over wet or slippery surfaces.

(2) Stunt driving and horseplay shall not be permitted.

(3) Before starting a tractor equipped with a power take-off shaft that is attached to equipment, the power take-off shall be disengaged when an unexpected start-up of the attachment could be hazardous.

(4) The operator shall disengage power to any power take-off attachment when it is not in use.

(5) The operator of a tractor shall transport a load in a bucket or front-end loader with the attachment in the lowest possible position.

R 408.12261. Operating on slopes and grades.

Rule 2261. A tractor shall not be operated on a slope or grade unless consideration is given to the type of tractor and attachment, type and condition of the surface, speed and direction of movement, and other factors that may cause the tractor to overturn.

APPENDIX

FIGURE 1
TRACTOR WITH TYPICAL PROTECTIVE ENCLOSURE

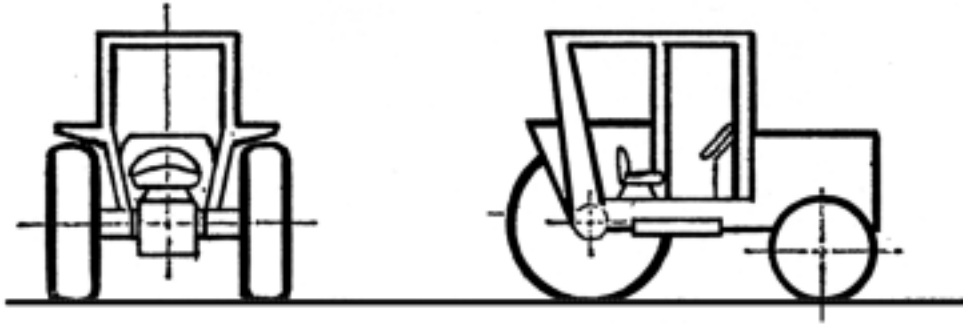


FIGURE 2
TRACTOR WITH TYPICAL PROTECTIVE ROPS

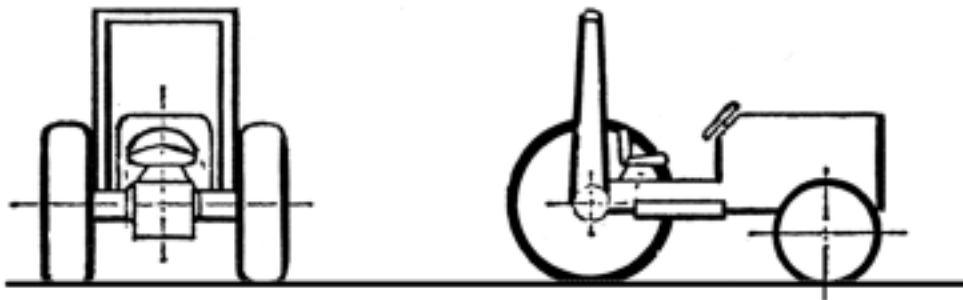
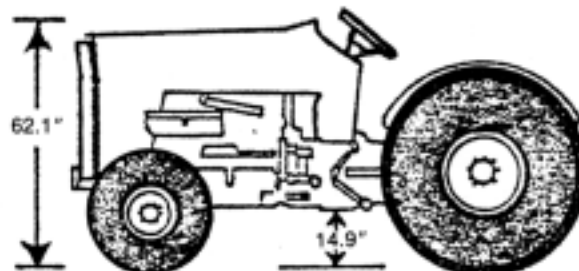


FIGURE 3
LOW PROFILE TRACTOR



Low Profile (with 16.9-24 tires)